

## Observations of diurnal activity in the Striped Legless Lizard *Delma impar*

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### Abstract

Five separate observations of diurnal activity of adult Striped Legless Lizard *Delma impar* are described. Snout-to-vent length, tail length and mass were recorded. As well, another five sightings of active/basking *D. impar* on rocks or perched on the peduncles of Kangaroo Grass *Themeda triandra* tussocks were recorded. (*The Victorian Naturalist* 124 (3), 2007, 167-169)

The Striped Legless Lizard *Delma impar* has been the focus of considerable research effort over the past 17 years, leading to a recognition that its numbers have declined, due mainly to habitat modification and destruction (Coulson 1990; Kutt 1993; O'Shea and Hocking 1997; Rohr and Peterson 2003). Its preferred habitat, native temperate lowland grasslands, are recognised as threatened (Muir 1994; Kirkpatrick *et al.* 1995) and *D. impar* has been classed as 'endangered' (DSE 2003). However, many gaps still exist in the knowledge of the basic biology of *D. impar*, particularly in relation to its habitat utilisation and behaviour in the wild. While the general consensus is that *D. impar* is primarily diurnal (Martin 1972; Coulson 1990; Kutt 1993), it is evident that few individuals have been observed away from cover in the field. Instead, most are found beneath ground cover (stones) by day, and their diurnality has been inferred from the timing of their appearance in pitfall traps, and from daytime pigment tracking (Coulson 1990; Kutt 1993). Furthermore, a number of authors has inferred that *D. impar* is primarily terrestrial (Coulson 1990; Kutt 1993; Osmond 1994), though observations of the species in captivity indicate that they are adept climbers and routinely climb bushes and even sleep in them (Martin 1972).

Below I describe five separate observations of adult *D. impar* basking or active away from cover during daylight hours in the field. With one exception, all observations occurred in a former 30 ha area of remnant native grassland in Deer Park (144°46'E, 37°46'S), 17 km west of Melbourne, during the period 1991-93. The area was gently sloping with Kangaroo Grass *Themeda triandra* dominant, and abundant surface basalt. One of the observations (3 below) occurred

in grassland abutting the northern boundary of Derrimut Grassland Reserve (144°47'E, 37°48'S) (see Coulson (1990) for site description). The following abbreviations are used: SVL = snout-to-vent length, TL = (original) tail length and M = mass. Shade temperatures were recorded immediately after the observations.

1. 5 October 1991, 1030 hrs, full sun, 22°C. An adult *D. impar* was observed completely exposed and perched on a large flat-topped basalt rock (0.8 × 0.6 × 0.3 m) in full sun. The lizard lay motionless close to the perimeter, apparently basking, and did not react to being approached until I was within arm's reach. It responded with a rapid flick of the body and tail that resulted in it falling into relatively short grass (<0.15 m) around the base of the rock, causing me to momentarily lose sight of it. I flushed it out across a bare patch of ground towards another rock some 2 m away. Its movements were broadly S-shaped and saltatory. It skirted around the rock edge, eventually seeking refuge beneath it; on lifting the rock the lizard was revealed tightly curled up. The surface of the rock on which the lizard was originally perched was quite cool to touch. Measurements were: SVL = 95 mm, TL = 203 mm and M = 5.7 g.

2. 25 January 1992, c.1400 hrs, overcast, 24°C. In the course of walking through a heavily grazed paddock I noticed a flicking movement from the top of a rock (0.36 × 0.34 × 0.16 m) about 3 m away in a small patch of Kangaroo Grass. The movement was that of a lizard dismounting the rock, but was not consistent with the movements of the Tussock Skink *Pseudemoia pagenstecheri* that are common in the area. On rolling the rock, an adult *D. impar* was revealed curled up, but within seconds it retreated into surrounding Kangaroo Grass

tussocks. After several minutes searching it was found curled up at the base of one of the tussocks. Both the lizard and the surface of the basking rock were warm to touch in comparison to the soil substrate, and the lizard was very active when handled. Measurements were: SVL= 80 mm, TL = 159 mm (original with tip missing).

3. 20 March 1993, c.1200 hrs, full sun, 30.1°C. An adult *D. impar* was observed perched 0.2 m above the ground on emergent Kangaroo Grass peduncles near a large well-embedded rock. It was evidently disturbed on my approach and with a flicking action dropped to the base of the tussock and could not be located.

4. 27 December 1991, 1120 hrs, sunny, 28°C. An adult *D. impar* was observed perched on a tangle of Kangaroo Grass peduncles in a dense swathe approximately 0.5 m off the ground. Within 2 m of my approach a flicking action of the body caused it to fall into the dense ground layer below and it could not be located.

5. 10 February 1992, 1530 hrs, completely overcast, 24°C. An adult *D. impar* was observed perched on a tangle of Kangaroo Grass peduncles and leaves in a small stand of tussocks approximately 0.4 m off the ground. Within 1 m of my approach the lizard rapidly flicked its tail and dropped into the tussocks below and could not be located.

In addition to these observations another five sightings of active/basking *D. impar* on rocks (n=2) and perched on the peduncles of Kangaroo Grass tussocks (n=3) were recorded. However, encounters were fleeting and the lizards were not located. All observations occurred during the months October to March when the species is known to be active (Coulson 1990).

The observations confirm the species' tendency to climb low vegetation, as observed in captive individuals (Martin 1972). Evidence of this climbing tendency was also apparent in pigment tracking studies in which pigment was located up to the middle or top of tussocks in approximately half of all lizards tracked (8 of 15; Kutt 1993). Given the tendency of Kangaroo Grass to form dense swards when burning is infrequent, this behaviour makes sense: the small size of lizards in relation to grass tus-

socks requires them to seek perches, such as protruding rocks and grass stems, in order to bask. Climbing has also been observed in two other species of *Delma* in the contexts of basking and prey pursuit (Martin 1972; Annable 1983). The peculiar flight reaction observed of *D. impar* (observation 1) is interesting given that saltation has been recorded in three congeners (Bush 1981; Maryan 1984, 1985; Bauer 1986); it was not accompanied by vocalisation as in some of these species. The observations above indicate that *D. impar* does engage in diurnal basking and that they are adept climbers, however, witnessing these behaviours in the field is not easy since they respond rapidly to disturbance and then are very difficult to locate amongst tussocks. *Delma impar*'s movements and reaction to disturbance are quite distinct and unlike those made by other similar-sized reptiles inhabiting the grasslands around Melbourne.

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## Regardfully Yours: Selected Correspondence of Ferdinand von Mueller Volume III: 1876-1896

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Here is the volume of Mueller's correspondence that includes references to the Field Naturalists Club of Victoria (FNCV). This third and final volume spans the last two decades of Mueller's life, when he was 50 to 71 years old, and the first sixteen years of the FNCV's existence. During this period, Baron Ferdinand von Mueller was still Victoria's Government Botanist (in the Chief Secretary's Department) but no longer Director of Melbourne's Botanic Garden, and continued to document the Australian flora and enlarge and curate the government herbarium, and to speak and write prolifically on all matters botanical. Since the Baron was an honoured member and patron of the FNCV, it is not surprising that the pages of Volume III provide early glimpses of the Club – thirteen mentions in the index. Mueller's huge bibliography in Volume I includes his papers in *The Victorian Naturalist*. You can find information about Mueller and the project which has spawned three volumes of his selected correspondence in my review of the first two volumes in *The Victorian Naturalist* 122 (2), 2005.

One of my reasons for being a tad tardy in reviewing this volume is that it is so useful. I've been delving into the three volumes for several projects – Mueller's continuing interest in the acclimatisation of foreign plants, his contributions to international exhibitions, and his interactions with

Frederick McCoy, the professor of natural science at the University of Melbourne.

Some of the 326 letters and documents in Volume III show how Mueller continued to use his correspondence to complain bitterly at losing (in 1873) that essential adjunct to his position as Government Botanist – the Botanic Garden. Without it he could not test the cultivation of indigenous and foreign plants. And without the laboratory in the adjacent Domain, he could not have plant products prepared to showcase the Colony's botanical resources in museums and at local and international exhibitions. To add insult to injury, his successor, the Garden's curator, William Guilfoyle, sent timber and other exhibits from trees Mueller had had planted in the Botanic Garden. Mueller fumed (in German) that a quite uneducated gardener, who simply copies the Sydney flower garden ... can not only daily give himself airs before the public with *my* treasures, with the help of the assistants schooled for years by me, he can send things for the exhibitions from *my* plants [pp. 174-5 translation].

Mueller also complained to Joseph Hooker, Director of the Royal Botanic Gardens at Kew in England,

I am *daily hampered* for forest-investigations, for which I want the rich collection of *living trees*, established by me in the bot